Health Services
LOS ANGELES COUNTY

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To ensure access to high-quality, patient-centered, cost-effective health care to Los Angeles County residents through direct services at DHS facilities and through collaboration with community and university partners.

April 18, 2016

TO: Supervisor Hilda L. Solis, Chair
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe
Supervisor Michael D. Antonovich

FROM: Mitchell H. Katz, M.D.
Director

SUBJECT: **INTEGRATION OF THE eCONSULT AND THE LOS ANGELES NETWORK FOR ENHANCED SERVICES (LANES) SYSTEM**

On November 10, 2015, your Board directed the Director of the Department of Health Services, in coordination with the Chief Executive Office (CEO) to respond to the following:

1. Leverage existing resources, or to contract with a third party vendor with expertise in health care information systems, to conduct a study and report back to the Board in writing within 120 days on the best solution to integrate the back end and/or the front end of the eConsult and Los Angeles Network for Enhanced Services (LANES) systems so that authorized County and community partner providers can appropriately make specialty care referrals and retrieve patients' electronic health records through a single portal without the need of accessing multiple systems;

    a. This report back shall include an assessment of potential cost and timeline of implementing best technology to exchange health information between Cerner-based Electronic Health Systems, including DHS's Online Real-time Centralized Health Information Database (ORCHID) system, Jail Health Services, the Probation Department's Juvenile Court Health Services and Martin Luther King, Jr. Community Hospital;

2. The report back shall also include a study and assessment on the feasibility, potential cost and timeline for creating a single connection between LANES and other Cerner-based electronic health record systems as opposed to multiple application programming interfaces to maximize efficiencies and save costs (see attached illustration); and,

3. The impact of the eConsult program on patient outcomes, specifically patient experience scores, with the specialty referral process and specialty referral rates per 1,000 members per year, for the top 5 most common DHS medical specialties within 120 days. If possible, these measures should be shown before and after implementation of the eConsult program in order to demonstrate the impact of the program.

Los Angeles County Department of Health Services (DHS) is committed to ensuring each person receiving care from DHS has an integrated single medical record for improved treatment and continuity of patient care. Toward that goal, DHS has worked to implement the Online Real-time Centralized Health Information Database (ORCHID) electronic health record (EHR; Cerner Millennium®) system. As of March 1, 2016, all of DHS is delivering care on ORCHID, allowing DHS to function as an integrated healthcare delivery network. Supporting care coordination across DHS can improve health outcomes; patient satisfaction as well as potentially reduce cost of care delivery. Further, DHS is supportive of pushing ORCHID to other County departments delivering health care in order to create a larger county enterprise EHR.

Having stated this goal, there are natural limitations to what are appropriate solutions that can be contained within an enterprise EHR; and although DHS has collapsed as many legacy solutions as possible into its enterprise EHR, ORCHID, there are still some solutions that naturally fall outside the limitations of todays' EHR. For example, most health systems, including DHS, maintain a separate Picture Archiving and Communication System (PACS; Fuji Synapse®). The PACS is a separate solution used to capture and store radiologic images. For timely delivery of patient care, it is critical to have PACS interfaced with ORCHID, such that image viewing can be performed via ORCHID. So although DHS has adopted the philosophy of examining whether any legacy or new functionality can sit within ORCHID, there are limitations. Similarly, health information exchanges (HIE), such as the Los Angeles Network for Enhanced Services (LANES), and Health Insurance Portability and Accountability Act (HIPAA) compliant peer-to-peer communication tools, such as eConsult, are on separate solution platforms that are interfaced to the EHR, ORCHID.

LANES Connects DHS to Non-County Health Care Providers in LA

LANES is envisioned as a community-governed standalone HIE for all safety-net health care providers and plans within Los Angeles County. HIEs are used to facilitate the electronic exchange of information between physicians and other healthcare providers and plans, to appropriately share a patient's vital medical information when and where it is needed thus improving the quality, safety and cost of patient care. LANES is architected as a centralized HIE, where agreed upon clinical information is maintained in a centralized data repository and continually updated via interfaces connected to each of the contributing EHRs. The LANES contracted vendor is Mirth, where Mirth is implementing, maintaining and hosting the HIE platform. In many instances health information in LANES will be accessed directly from within an EHR (e.g. ORCHID supports this, as do most other hospital-based EHRs as well as some community

partner EHRs) or via a LANES specific web-portal. Like all HIEs, LANES functions through a query-based process. When a patient presents for care, a participating LANES health care provider will access LANES health information within their own EHR (DHS providers will be able to see the LANES information on their patient within ORCHID) or enter the appropriate patient identifying information in the LANES web-portal. If patient specific information resides in the LANES clinical data repository, all of the information will be returned to the health care provider either within their EHR or to the LANES web-portal in response to the query. So, in the case of an HIE, such as LANES, a query is not a response to a specific question, but is the sharing of any medical records contributed to LANES on the patient demographic used to generate the query. Although the response is patient specific, the information returned by LANES is not focused; it is generic in that any and all information on that patient within LANES is pushed out in response to the query.

LANES, similar to most HIEs, has been initiated by seed funding from a number of sources, including, but not limited to, the State, Los Angeles County, LA Care Health Plan, United Healthcare, and American Recovery and Reinvestment Act (ARRA). LANES is a 501(c) 3 non-profit organization that includes the Community Clinics Association of Los Angeles County, the Hospital Association of Southern California, LA Care Health Plan, and others on its Board of Directors. The LANES Board has received crucial staff support from the Chief Executive Office of Los Angeles County and the office of the Los Angeles County Chief Information Office. As LANES becomes operational there will be an annual participation fee for all users to support its operations. This fee will scale from the small single practitioner community partner up to the larger organizations like DHS, other large private hospitals, and Medi-Cal managed care health plans.

On April 27, 2010 the Board of Supervisors for Los Angeles County instructed the Chief Executive Officer of Los Angeles County to sign a Memorandum of Understanding with LANES. Shortly after this, DHS became a core participant and central supporter of LANES. Members of DHS have been working in a coordinated manner with the LANES team to get LANES operational. Although LANES is not live at this time, it is expected to be exchanging its first messages within the second quarter of 2016. The initial LANES participants are likely to include DHS, Dignity Health hospitals located in Los Angeles County, MLK Community Hospital, LA Care Health Plan, and at least 9 Community Clinic Association of Los Angeles clinic member organizations. Additional private hospital organization members of the Hospital Association of Southern California have also come forward expressing interest in joining LANES.

Exchange of Health Information Among County Departments

Within Los Angeles County Departments, there are currently three separate instances of Cerner Millennium®: ORCHID, Jail Health Information System (JHIS; Sheriff Department), and Probation Electronic Medical Record System (PEMRS; Probation). Cerner offers a number of appliances to connect Cerner branded EHRs to ensure

interoperability. One appliance frequently used is Resonance and it can connect Cerner-to-Cerner EHR instances at no additional expense to the clients. For the County, this would include ORCHID, JHIS, and PEMRS, as well as noted County partner Martin Luther King, Jr. Community Hospital.

One issue that has delayed pursuit of connecting the three existing Cerner instances in the County are that PEMRS and JHIS needed to be upgraded to more recent versions of the Cerner EHR software in order to be able to use an appliance such as Resonance. Of the three Cerner instances at Los Angeles County, PEMRS is farthest along in its implementation of Resonance with the technical portion of the implementation complete. The challenge with PEMRS is there are specific laws applying to a youth's probation status. The departments are working with the Office of County Counsel to evaluate. In the meantime, we plan for PEMRS to only receive information from the other EHRs it is connected to, but not to share information outside of Probation.

JHIS anticipates being ready to connect to an HIE via the Resonance appliance in February 2017. JHIS is currently going through a series of two, system and solution upgrades, to the JHIS Cerner Millennium® platform. Within the current upgrade schedule and the limitation of resources, exploration will occur on whether implementing Resonance can be pulled forward into the latter part of 2016. County Counsel is examining what, if any, are the regulatory requirements beyond HIPAA that may impinge on the information JHIS is allowed to share outside of the Sheriff's Department.

ORCHID is currently on a code version not requiring an upgrade to support the implementation of Resonance or any of the other interoperability appliances from Cerner. As DHS operates emergency departments and acute care facilities, its interoperability use cases for an HIE, such as LANES, differ significantly from both the Sheriff and Probation Departments. DHS explored a number of interoperability appliances and approaches with Cerner and Mirth (LANES HIE vendor). The best approach for DHS and the County to connect ORCHID to LANES is to use Cerner's Clinical Exchange Platform (CEP). CEP is most frequently utilized when connecting Cerner EHR instances to centralized HIE systems like LANES, which maintain continually updated clinical information from diverse EHR vendor systems in a centralized data repository that is optimized to push out health information to HIE end-users in real-time.

Careful consideration of the best method to connect the County EHRs together and to LANES is required due to the possible privacy and legal concerns for Probation and Sheriff mentioned previously, and the Board's desire to have a single connection between the County EHRs and LANES. Resonance would require additional custom interface development and custom operational jobs to provide the same connectivity functionality CEP would provide for DHS. As a centralized HIE, LANES requires real-time delivery of hospital clinical information from ORCHID into its database to enable high-speed health information exchange out to non-County LANES end-users such as the private hospitals, the health plans, and DHS' community partner clinics. Additionally, LANES supports real-time encounter notification messages for care

coordination, a functionality not optimally supported by the Resonance appliance. Within the County, the specific use case of encounter notification is unique to DHS due to its emergency departments and acute care facilities, and differs from the use cases either Sheriff or Probation present. Real-time encounter notification is one of the key value propositions for LANES, and a feature DHS' community partner clinics require. Unlike hospital data, real-time delivery of clinic-based health information from JHIS and PEMRS into LANES is not necessary, thereby making Resonance a good approach for Sheriff and Probation.

Since DHS has determined CEP to best meet the Department's connectivity needs, DHS is working with Cerner and Mirth to determine an implementation timeline and project. It is anticipated CEP could be implemented by the summer of 2016. CEP is anticipated to cost less than $200,000 for implementation with an annual maintenance of approximately $12,000. This ultimately means the County will implement both appliances – Resonance for JHIS and PEMRS, and CEP for ORCHID. As DHS will be on CEP, a CEP to Resonance connection will be established to connect the three departmental EHRs (Diagram). This establishes interoperability within the county, although information exchange maybe limited in view of current regulations, laws, and pending guidance from County Counsel.

Martin Luther King, Jr. Community Hospital has an emergency department and is an acute care facility. So, similar to DHS, the Community Hospital would benefit from connecting to LANES using the CEP appliance for their instance of Cerner Millennium®, the EHR.

Unique Functionality of eConsult

DHS' eConsult was developed to provide a standalone electronic platform to enhance HIPAA compliant peer-to-peer collaboration, a clinical conversation, enabling clinicians to resolve patient-specific questions in an iterative process. eConsult enables primary care providers (PCP), who are part of the DHS community partner network, the ability to ask a patient-specific question via eConsult of DHS specialty providers in near real-time, with the specialist able to respond via eConsult. Further, eConsult supports the iterative nature of a clinical conversation, allowing further detail and discussion to occur between PCP and specialist. Prior to eConsult's implementation, the traditional specialty referral process within DHS took multiple weeks for the patient to be seen by the specialist, and a similar amount of time for the specialty visit information to get back to the PCP. With eConsult, approximately one-quarter of the interactions are resolved without requiring a face-to-face visit of the patient with the specialist. This saves the patient time and work absence, as well as providing resolution to their health concerns in a timelier manner. In some instances, it is clear from eConsult, the patient needs a procedure and these can be directly scheduled, again saving the time of the initial visit of the patient to the specialist. In the remaining instances, the patient is scheduled for an appointment with the specialist, but now the specialist has much better clinical context and background of what the patient needs from their services, and the patients are scheduled to be seen in a timely manner.

The first eConsult was performed on July 18, 2012. As the Board is aware, Safetynet Connect (SNC) developed the initial platform in collaboration with LA Care and DHS. The initial funding came from LA Care, and the intent of the platform was to connect the community partners contracted to extend DHS primary care services to the DHS specialists the PCPs refer patients to. On October 29, 2013 the Board of Supervisors approved DHS taking over the eConsult platform and managing it independently from LA Care. In 2016 there are 6,000 current users, where 4,000 of them are medical providers (physicians and mid-level clinicians), and approximately 14,000 new eConsult requests are created monthly. With Board support, DHS has borne the financial costs associated with the implementation, maintenance and support of eConsult as it relates to DHS users and users representing our community partners in primary care.

A key element of eConsult's success is the building of relationships between PCPs and specialists via clinician-to-clinician dialogue. In the traditional patient referral process, a PCP develops a trusted relationship with a specialist or group of specialists through the repeated interaction of patient referrals, where the PCP eventually learns how a specialist thinks and manages a variety of clinical issues. The trust a PCP and specialist develop translates into improved care and service for the patients they co-manage. eConsult uses the platform to create this same clinician-to-clinician trust environment electronically. For example, when a given PCP requests a referral to a cardiologist, there may be 25 cardiologists on eConsult, but eConsult manages the relationships such that a PCP refers to a specific cardiologist each time. This would be true for a neurologist, nephrologist, endocrinologist and each of the other specialties. For a given PCP, eConsult maintains a "medical village" of specialists that the PCP uses repeatedly for patient referrals, such that trusted relationships can be fostered and built over time. These trusted relationships translate into better knowledge transfer, increased confidence of the PCPs and, over time, may result in the PCPs being able to manage and treat clinical entities in patients they previously would have directly referred to a specialist.

Coinciding with the implementation of ORCHID, DHS has examined whether ORCHID could consume the functionality of eConsult. ORCHID, like many EHRs, supports the Direct Project's technical and security standards. The Direct Project is an Office of the National Coordinator (ONC) standard for HIPAA compliant messaging from clinician-to-clinician from the initial clinician's EHR to the second clinician's EHR. On the surface it seemed like direct messaging would be a solution akin to eConsult, but after delving into the details, DHS recognized direct messaging would not be able to supplant eConsult. Direct messaging is dependent on having either an EHR or an HIE. Although most of the DHS community partner PCPs have an EHR, not all of the EHRs are direct messaging compliant, and currently none of the community partners have access to an HIE. In addition, direct messaging does not have the tools and controls to allow management of the PCP-Specialist relationships as in the "medical village" concept contained within eConsult. Without the ability to manage a "medical village," it is not possible for the trusted relationships, learning and knowledge transfer to occur between PCPs and specialists. Another shortcoming with direct messaging is it does not allow

the iterative clinical conversation between PCP and specialist to be captured as a completed conversation that can then be attached to the medical record as a completed referral. For these reasons, ORCHID was not felt to be a good platform to supplant the needs and functionality of eConsult.

Similarly, knowing that LANES is on the horizon, DHS has gone through the exercise of examining whether eConsult or its functionality could be supported on the LANES HIE platform. The same concerns and challenges regarding the use of direct messaging through an EHR also exist regarding the use of direct messaging delivered via an HIE. So direct messaging on LANES would not support the functionality of eConsult. LANES as an HIE does not have any other intrinsic functionality that could be leveraged to support the functionality of eConsult. Recall that as an HIE, LANES shares medical records and does not support the ability for text-based query and response in an iterative process to a specific question or set of questions.

SNC, the vendor partner for eConsult, estimates the "sunk" cost in the current eConsult platform to be around $4 million. In order for eConsult's functionality to sit on top of an HIE, SNC would have to rearchitect eConsult from a platform to a service model. The estimates from SNC to perform this work are roughly $1 - 2 million to stand up eConsult on LANES, a professional service budget of $800 – 1000 per site, a variable integration fee per client (eligibility files, reporting, transactional needs…), and a fee per transaction (both LANES has a transaction cost as well as $10-15 per eConsult for SNC). This is in addition to the annual membership fee to LANES and related professional services costs from the LANES HIE software vendor Mirth Corporation. If DHS were to convert its current support contract with SNC to a per transaction model at a volume of 14,000 eConsults per month it would approximate the $10 – 15 per transaction fee stated above. Given that eConsult is deployed, stable and providing service throughout DHS and the community partners, DHS does not believe it prudent to spend this money with the sole goal of creating a single portal of access for LANES and eConsult. Recall, DHS made a decision to bear the cost of implementing and deploying eConsult for its community partner PCPs. In addition, due to the nature of the eConsult clinical conversation and its iterative process, many PCPs and specialists continue their conversations after traditional work hours by using mobile technologies, such as a smartphone or tablet. Whereas, due to the nature of the medical records obtained from LANES, many PCPs will access LANES not through a portal, but through their respective EHRs. Forcing LANES and eConsult into a single portal will create a barrier to the use of eConsult.

In its current state, eConsult has had tremendous impact on patient access to specialty care. In 2011, prior to eConsult, DHS had over 350,000 patient referrals for specialty care. The wait times in 2011 were extremely long: 162 days for Gastroenterology; 86 days for Nephrology; 222 days for Podiatry; 208 days for Urology; 140 days for Cardiology; 208 days for Dermatology; 109 days for Gynecology; and 225 days for Neurology for example. In 2016, with over 350,000 eConsults completed since inception, there are approximately 14,000 eConsults being generated per month. Once an eConsult is generated by a primary care provider, the average time of response by a

DHS specialist is 3 calendar days. Having clinical knowledge of patients needing specialty care through eConsult provides the ability for specialists to expedite cases needing more rapid specialty attention and to designate specific face-to-face visit instructions based on clinical needs. The 2.5 day response time does not necessarily translate into resolution of the patients' issue, but does mean a specialist has reviewed the consult and is in communication with the primary care provider on working toward a resolution. A resolution may include: patient's need addressed without requiring a face-to-face visit (13%); a change in specialty consulted (6%); extended dialogue for PCP-specialist co-management (5%); and scheduling of a face-to-face visit or procedure directly (71%). When a face-to-face visit is necessary, the appointment is scheduled after personal patient contact from the DHS Appointment Service Center. This personal contact has translated into an improved patient experience, quick scheduling turnaround times, and a lower patient no-show rate.

In 2012, DHS performed a brief survey of 100 patients on their experience with eConsult and the Appointment Service Center. On a scale of 1 (worst) to 5 (best) patients responded to six questions: 4.03 was the average response to the time interval to call to schedule an appointment; 4.44 was the average response to the courtesy of the Appointment Service Center staff; 4.41 was the average response to the helpfulness of the Appointment Service Center staff; 4.33 was the average response to the overall scheduling experience; 4.08 was the average response to the preparedness of the specialty provider; and 4.14 was the average response to the overall appointment experience. Although there are no historical comparators, these numbers do support the belief that eConsult improves the efficiency and effectiveness of service patients receive from DHS specialty care.

In fiscal year 2014/2015 the five most common specialties requested by primary care providers at DHS and the Community Partners were: Ophthalmology; Gastroenterology; Surgery; Dermatology; and Orthopedics. The number of referrals made via eConsult for these five specialties can be found in Table 1, as well as the number of referrals resulting in face-to-face visits.

Table 1

Number of Specialty Referrals via eConsult - Selected Specialties, FY14/15						
	Ophthalmology	Gastroenterology	Surgery	Dermatology	Orthopedics	Total
Total Number of Specialty Referrals	16,922	12,641	9,801	10,197	10,446	60,007
Number of Referrals to Face-to-Face Visits	12,127	8,426	7,452	6,594	7,348	41,947

Table 2 provides further detail on the five most common specialties and how they were used by patients empaneled to DHS (n = 283,330 patients) in fiscal year 2014/2015. Table 2 also shows the rate of specialty referrals and rate of face-to-face referrals per one thousand empaneled patients.

Table 2

Number of Specialty Referrals; Empaneled Patients (n = 283,330) via eConsult - Selected Specialties, FY14/15						
	Ophthalmology	**Gastroenterology**	**Surgery**	**Dermatology**	**Orthopedics**	**Total**
Total Number of Specialty Referrals; Empaneled Patients	5,512	4,575	2,818	3,547	3,726	20,178
Rate of Specialty Referrals per 1,000 Empaneled Patients	19.5	16.1	9.9	12.5	13.2	71.2
Total Number of Referrals to Face-to-Face Visits; Empaneled Patients	4,120	3,360	2,260	2,381	2,852	14,973
Rate of Face-to-Face Referrals per 1,000 Empaneled Patients	14.5	11.9	8.0	8.4	10.1	52.8

If you have any questions or need additional information, please contact me at (213) 240-8101.

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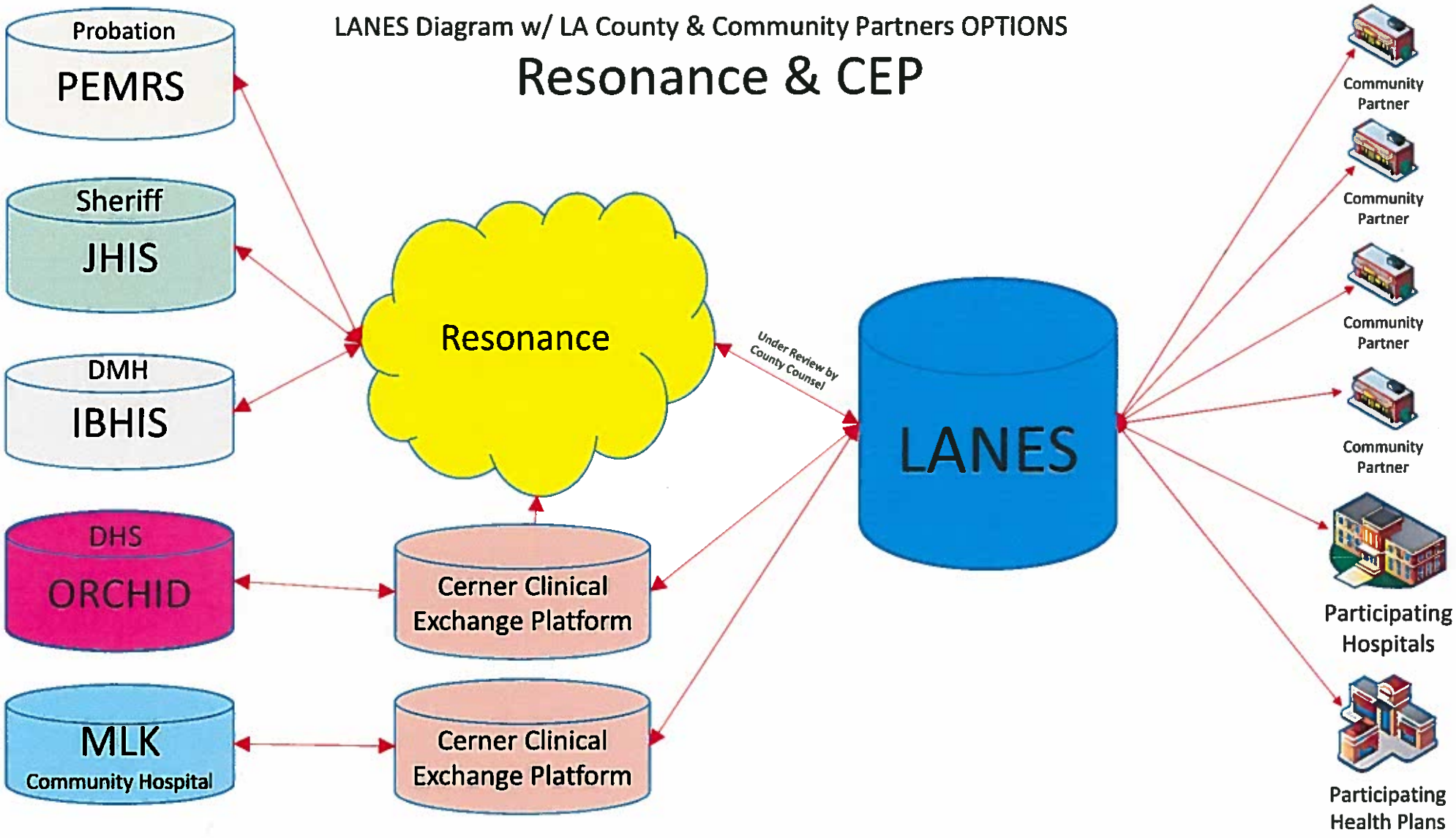
Attachment

c: Chief Executive Office
County Counsel
Executive Office, Board of Supervisors


LANES Diagram w/ LA County & Community Partners OPTIONS
Resonance & CEP
Probation
PEMRS
Sheriff
JHIS
DMH
IBHIS
DHS
ORCHID
MLK
Community Hospital
Resonance
Cerner Clinical Exchange Platform
Cerner Clinical Exchange Platform
Under Review by County Counsel
LANES
Community Partner
Community Partner
Community Partner
Community Partner
Participating Hospitals
Participating Health Plans